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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
KITOV, ZEEV	

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

SM

Office Action Summary	Application No.	Applicant(s)	
	09/747,345	UDREN, ERIC A.	
	Examiner	Art Unit	
	Zeev Kitov	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 August 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Examiner acknowledges a submission of the amendment and arguments filed on January 13, 2005. Arguments have overcome rejections under 102 (b) and 103(a). However, new evidence was found. The new Office Action follows.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the parallel-connected current transformers of Claim 3 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Currently Fig. 3 of Drawings shows the phase voltage transformers connected in Y fashion, rather than in parallel.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. A reason for that is in the following limitation of the claim: "said set of leads comprises phase leads connecting said current transformers associated with each phase in parallel"... The only Drawing pertinent to the Claim is Fig. 3 showing transformers 23A1 – 23C1. However, they are connected between elements 47A1 – 47C1 on one side and 49-1 on other side. Both groups of elements 47A1 – 47C1 and 49-1 are disclosed in Specification as terminals (page10, lines 1 – 7). Therefore, the transformers 23A1 – 23C1 are connected between individual phases and the ground. Being connected this way, they cannot be called current transformers, since their primaries carry a full voltage of individual phase. According to IEEE definition (The Authoritative Dictionary of IEEE Standard Terms, 7th Edition), the current transformer has its primary winding connected

in series with the conductor carrying the current to be measured, which is different from the connection shown in Fig. 3. In addition to that, it is not clear how the transformers can be connected in parallel. What is shown in Fig. 3, is a kind of Y-connection between transformers.

For purpose of examination, patentable weight was not given to the recited limitation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Li article, Station-Bus-Protection in Applied Protective Relaying from Westinghouse Corp. Regarding Claim 1, Li discloses all the elements of the claim including a distributed bus differential relay system for an electric power distribution system comprising a bus, a plurality of feeder lines including one feeder line (the leftmost vertical line in Fig. 9-7) supplying power to the bus and the remaining feeder lines connected to draw power from the bus, and a plurality of circuit breakers (represented by Opening winding in Fig. 9-7) each connecting an associated one of the feeder lines to the bus, the relay system includes: a plurality of current transformers (shown in Fig. 9-7) each measuring current in an associated feeder line; a set of leads connecting the plurality of current

transformers in parallel (common line on the left and plurality of connections through restraint windings); and a plurality of differential relay elements (restrain windings) connected across the set of leads and associated with one of the circuit breakers (presented by opening winding) for tripping the associated circuit breaker in response to predetermined voltage conditions across the set of leads.

Regarding Claim 2, Li discloses the differential relay elements including voltage responsive devices (shown by labels R/+, S/+ and T/+) tripping the associated circuit breaker in response to a persistent voltage across said leads above a predetermined value.

Regarding Claim 3, Li discloses the bus and feeder lines are multi-phase (page 9-7, col. 2), the current transformers are associated with each phase of each feeder line (see Note under Fig. 9-7), and the multi-phase differential relay elements (restraint windings) associated with each circuit breaker and connected across each of the phase leads and responsive to predetermined voltage conditions across any of the phase leads to trip the associated circuit breaker.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4 – 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Gonzalez et al. (US 5,670,923) and Wolfe (US 4,876,625). As was stated above, Elmore discloses all the elements of Claim 1. However, regarding Claim 4, it does not disclose the low energy trip device and the differential relays being powdered by differential transformers. Wolfe discloses the relays (elements $19_1 - 19_N$ in Fig. 2) powdered by differential transformers (elements $31_1 - 31_N$ in Fig. 2). Both references have the same problem solving area, namely protecting the power distribution systems. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Elmore solution by adding the current transformer feeding according to Wolfe, because it would provide substantial saving of the equipment. As to low energy trip devices, Gonzalez et al. disclose such low energy tripping device (shown in Fig. 1) based on flux shifting principle and consuming smaller amount of energy for operation. Both references have the same problem solving area, namely providing power system protection equipment. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the flux shifting tripping device of Gonzalez et al., because as Gonzalez et al. state (col. 1, lines 21 – 30), such trip devices are necessary for adaptation of the digital control systems in the circuit breaker environment.

Regarding Claims 5 and 6 Elmore discloses the system, wherein each circuit breaker has an overcurrent relay (elements 58, 68 and 76 in Fig. 1), which actuates the low energy trip device in response to certain conditions of measured current and the

current transformers associated with each feeder line provide measured current to the overcurrent relay of the associated circuit breaker.

Regarding Claims 7, Elmore discloses the system, which performs complex communication and data processing functions. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the microprocessor, since such method of providing communication and data processing functions is widely used in the art and becomes a common knowledge.

Claims 9, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Scott (US 4,788,620). Claims 9 and 13 differ from Claim 1 by the limitation of a voltage-limiting device, i.e. varistor. Scott discloses the voltage-limiting device (elements 20 - 22 in Fig. 1) connected across the outputs of the current transformers (elements 14 – 16 in Fig. 1) for limiting the voltage. Both references have the same problem solving area, namely providing monitoring the power transmission lines. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the voltage limiting element across the outputs of the current transformer according to Scott, because as Scott states (col. 2, lines 20 – 23), it is necessary to protect the current transformers against excess voltage surges.

As per Claim 11, requiring the voltage limiting device in each differential relay, it would have been obvious to one of ordinary skill in the art at the time the invention was

made to have further modified the Elmore solution by placing the voltage limiting device across the outputs of each current transformer, because otherwise, the differential relays equipment will not be fully protected.

Claims 10, 12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Scott and Webb (US 5,982,597). Claim 12 differs from Claim 11 by its limitation of a shorting device. Webb discloses the voltage-limiting device (varistor) having additional thermal protection by shorting when the device is overheated (See Abstract). Both references have the same problem solving area, namely protecting the equipment against overvoltages. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the shorting mechanism into the varistor according to Webb, because as Webb states (col. 1, lines 46 – 63), the overheating of the varistor can jeopardize its protection ability.

Regarding Claim 10, Webb discloses the device shorting the limiting voltage device (varistor). The shorting device (fuse) has ability to short the varistor in a case of overheating. As well known in the art, the thermal time constant is substantially larger than the time constant of the electromagnetic tripping devices. Therefore, the shorting will occur only after the circuit breaker is tripped.

Regarding Claims 14 and 15, Webb discloses the shorting mechanism, which acts after some period of time, quite sufficient for tripping of the circuit breaker. As well known in the art, the heating of the matter by the electric current is a function integral of

the voltage (current) over period of time. Therefore, the shorting mechanism acts by integrating the applied voltage (current) with respect to the time. The motivation for modification of the primary reference is the same as above.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Scott, Webb and Alley et al. (US 4,701,680). Claim 16 differs from Claim 15 by its limitation of including resistor in series with varistor. Alley et al. disclose the varistor (element 31 in Fig. 3) connected in series with the resistor (element 32 in Fig. 3). Both references have the same problem solving area, namely providing high voltage protection by using varistors. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the resistor in series with the varistor according to Alley et al. because according to Alley et al. (col. 4, lines 36 – 64), it serves two purposes: (a) it adjusting the threshold of activation of the varistor, and (b) the voltage drop across the resistor is used to activate the additional protection mechanism, such as changing the dimming level.

Response to Arguments

Applicant's Arguments have been given careful consideration but they are moot in view of the new ground of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose current telephone number is (571) 272 - 2052. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272 – 2800, Ext. 36. The fax phone number for organization where this application or proceedings is assigned is (703) 872-9306 for all communications.

Z.K.
04/01/2005